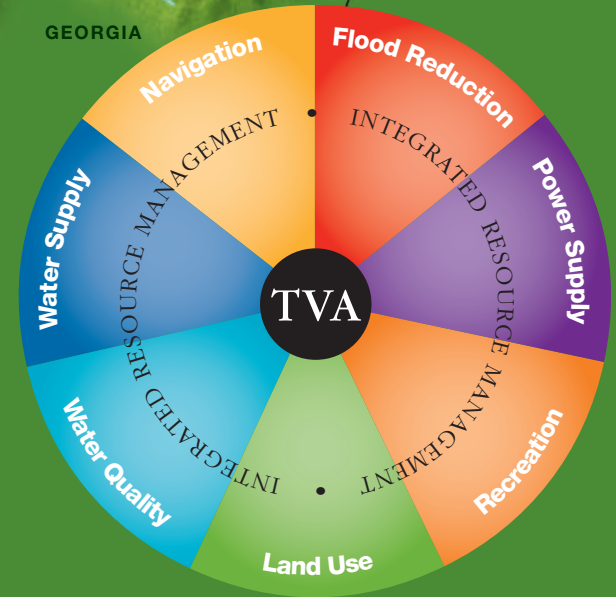


The Tennessee Valley Watershed



Integrated Land and Water Management



- TVA manages the Tennessee River system and 293,000 acres of public lands in the Valley.
- The river system includes 49 dams and reservoirs. Nine dams are on the main river and the rest are on its tributaries.
- The public land base varies by reservoir from a few hundred to several thousand acres. TVA manages these lands for multiple benefits, including conservation, recreation, and economic development.
- TVA manages the flow of water through the system to provide recreation opportunities while protecting water quality and aquatic resources, ensuring year-round navigation, preserving the reliability of the power system, and reducing the risk of flood damage.

The ecosystem of the Tennessee River Valley is a delicate web of rivers, streams, plants, animals, and other natural resources. So many events large and small affect this system, from rainfall amounts to land-use practices to carefully timed water releases from TVA dams. In managing the Tennessee River system, TVA considers the many needs that are met by the river to balance competing demands and ensure that the river system continues to provide multiple benefits. By carrying out its broad stewardship activities, TVA helps protect these land and water resources for present and future generations.

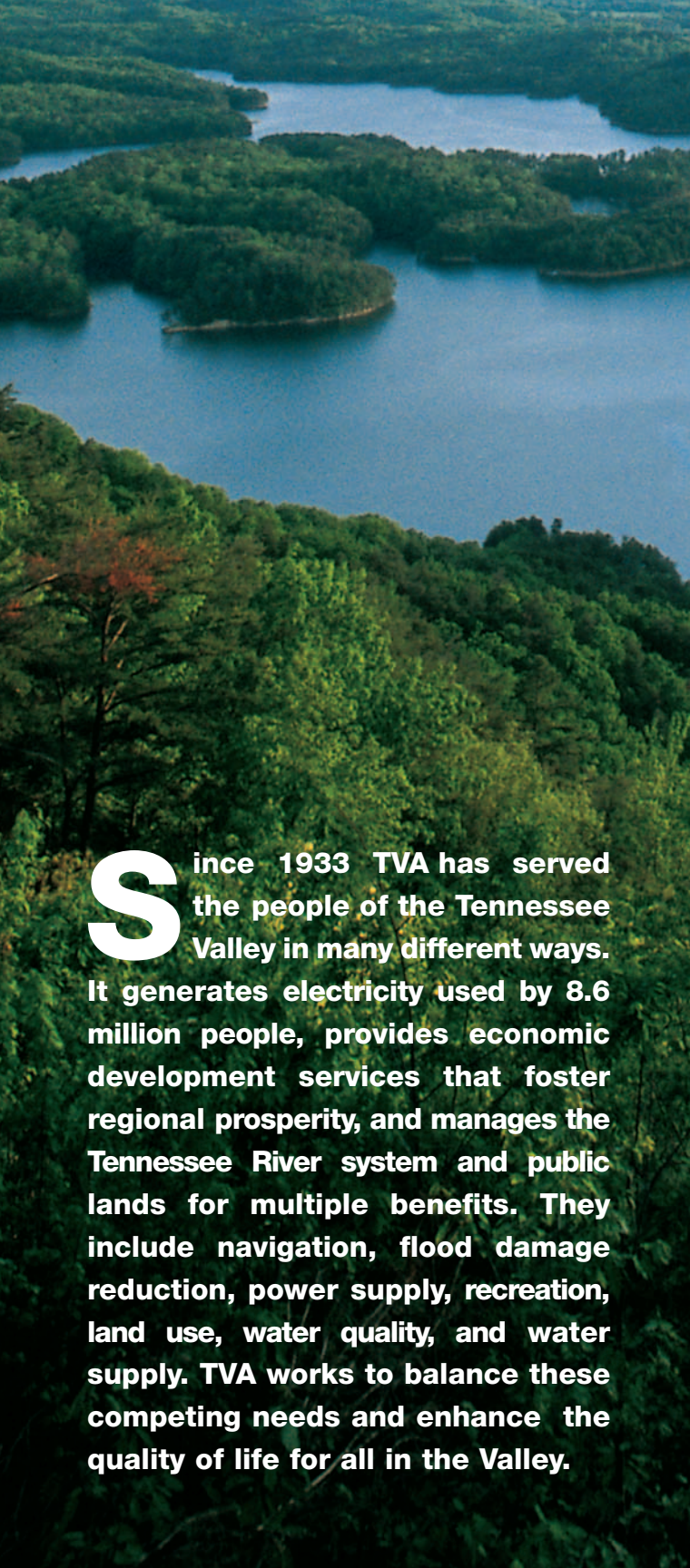
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Since 1933 TVA has served the people of the Tennessee Valley in many different ways. It generates electricity used by 8.6 million people, provides economic development services that foster regional prosperity, and manages the Tennessee River system and public lands for multiple benefits. They include navigation, flood damage reduction, power supply, recreation, land use, water quality, and water supply. TVA works to balance these competing needs and enhance the quality of life for all in the Valley.

Stewardship is the word TVA uses to describe its responsibility for managing the Tennessee River system. It means bringing skill and dedication to the job of overseeing the use and protection of land and water resources in the Valley.

In managing the river, TVA regulates the flow along the entire system of dams and reservoirs to provide enough water for different purposes. The TVA system includes high dams on the tributaries and low dams on the main river. Depending on the need, water can be held back behind the dams to reduce downstream flooding or released through them to generate power or support aquatic habitat, recreation, and navigation.



Navigation

Water levels are most constant in the main channel of the river, where huge barges carry grain, asphalt, coal, and many other items shipped in bulk. TVA

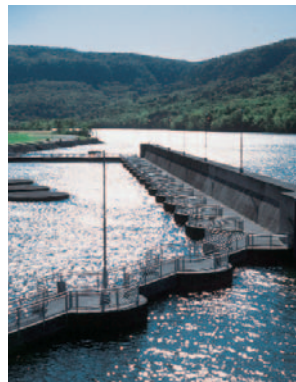
provides a nine-foot channel along the 652-mile length of the river for these slow-moving giants. Shipping by barge is a regional economic benefit because it's a low-cost option for bulk goods and it helps keep other shipping costs competitive. Together these factors save producers \$1 billion a year, which in turn helps reduce consumer prices.

Flood damage reduction

Although reservoir levels along the Tennessee River itself don't vary much because of other system needs, the high dams were designed for much greater variation to provide flood storage. TVA lowers the levels of most high-dam (tributary) reservoirs by January 1 to get ready for the winter and spring



storms that generally carry the greatest flood risk. Drawing some water from the reservoirs allows more room to store rainfall and hold back floodwaters. This system prevents an annual average of \$224 million in flood damage and has saved an estimated \$5.7 billion since the dams were built.



Power supply

TVA uses the reservoir system to produce hydropower at 29 dams and Raccoon Mountain Pumped-Storage Plant. Hydropower is a valuable asset because it's the least expensive power to generate and is emission-free.

Representing about 11 percent of TVA's total generation,

hydropower provides flexibility in meeting peak demands since it can be brought online quickly when enough water is available. It's also critical to power system reliability since it helps keep the supply of power matched to the demand. In addition, TVA's fossil and nuclear plants depend on the river because it provides crucial cooling water for system components.

Recreation

TVA's stewardship provides many water- and land-based recreation opportunities. TVA operates about 100 public recreation facilities that include campgrounds, day-use areas, and boat launching ramps. Whitewater rafting, fishing, hiking, and wildlife viewing are just a few of the rich variety of recreational opportunities visitors and residents enjoy. TVA



considered the importance of recreational needs when it changed its reservoir operating policy to a flow-based system in 2004. Water levels are kept high during the summer to support recreation while still meeting downstream needs.

Land use

TVA's public lands harbor rare plants and animals, wetlands, and other sensitive resources, as well as important Native American cultural sites. To guide its actions in managing these lands, TVA develops reservoir land management plans with public input. These plans assign particular uses to each parcel of land, such as recreation, resource conservation, economic development, and shoreline access. They provide a vision for TVA's management activities,

guide decisions on land-use requests, and provide information used in issuing permits for construction of shoreline structures such as docks.

Water quality

The timing and amount of flow through the reservoir system can affect water temperature, oxygen concentrations, and other water-quality measures. Water quality is also affected by nonpoint pollution, which results when rainfall carries fertilizer, nutrients, sediments, and other pollutants across land into water. To better understand water-quality conditions, TVA monitors oxygen levels, fish health, and other factors at many sites each year. Working in partnership with local citizens and other agencies, TVA uses this information to understand the causes of water-quality problems and to implement effective improvement activities such as adding stream-bank vegetation and using



low-impact development practices. To improve oxygen levels, TVA adds oxygen to waters where concentrations are low. This practice has helped improve fish health below 16 dams. In addition, because the riverbed below dams can dry out when the hydro turbines are not operating, TVA maintains enough water in the channel to provide habitat for fish and other aquatic life.



Water supply

Many communities in the Valley depend on the river system for their water supply, so TVA works closely with industries and municipalities to make sure that water intakes are supplied, even during extreme droughts. About 12 billion gallons of water are withdrawn every day. However, most of the water is returned to the river for other downstream uses. Urban growth will put more pressure on the system in the future as large cities outside the region request water withdrawals, called interbasin transfers. TVA is working with states, other agencies, and communities to resolve issues surrounding water needs.



TVA brings efficiency and expertise honed over more than seven decades to the task of managing the Tennessee River system, and it will continue to refine its approach. Read more about TVA's river system activities at www.tva.com/river.